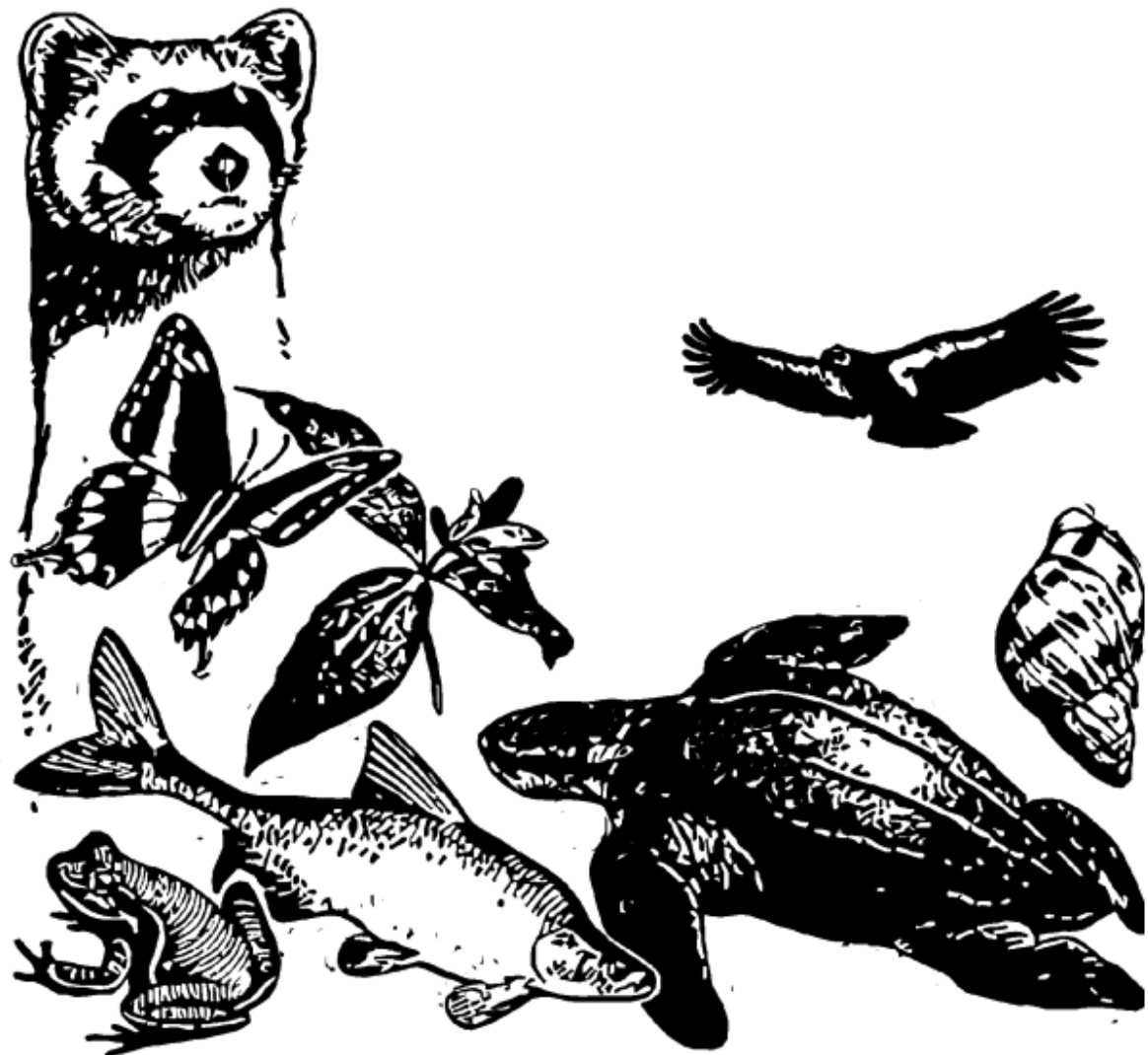


mussel AMMs

Cumberland Bean (pearlymussel) and 5 more species

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General Project Design Guidelines - Cumberland Bean (pearlymussel) and 5 more species

Published by Kentucky Ecological Services Field Office for the following species included in your project

Cumberland Bean (pearlymussel) *Villosa trabalis*

Littlewing Pearlymussel *Pegias fabula*

Tan Riffleshell *Epioblasma florentina walkeri* (=E. walkeri)

Cumberlandian Combshell *Epioblasma brevidens*

Fluted Kidneyshell *Ptychobranthus subtentus*

Slabside Pearlymussel *Pleuronaia dolabelloides*

The Tennessee River drainage, which includes the Cumberland River, contains the most diverse mussel fauna in North America and has also experienced great declines. The reach of the Cumberland River from below Cumberland Falls to the Tennessee State Line has lost 49% of the species historically recorded there. The completion of Wolf Creek Dam in 1950 was detrimental to freshwater mussel populations when it inundated 100 miles of mainstream Cumberland River and miles of tributaries and altered conditions downstream. Anthropogenic activities, especially stream channelization and water pollution from mineral extraction, continue to impact mussel populations in the Cumberland River drainage.

The species in the table below will appear on an IPaC-generated species lists if the project area you delineated for the proposed project is located within the Cumberland drainage below Cumberland Falls. The table lists streams and rivers in which these species are believed to be extant. There may be additional, currently unknown, occurrences of the species.

	Streams and Rivers in Kentucky in With Recent Records of the Species
Cumberlandian combshell (<i>Epioblasma brevidens</i>)	Buck Creek, Big South Fork of the Cumberland River, Rockcastle River (lower)
Cumberland bean (<i>Villosa trabilis</i>) ¹	Big South Fork of the Cumberland River, Buck Creek, Horse Lick Creek, Little South Fork of the Cumberland River, Rockcastle River, Sinking Creek
Fluted kidneyshell (<i>Ptychobranchnus subtentum</i>) ²	Big South Fork of the Cumberland River, Buck Creek, Horse Lick Creek, Rock Creek, Little South Fork of the Cumberland River, Otter Creek
Littlewing pearlymussel (<i>Pegias fabula</i>)	Big South Fork of the Cumberland River, Rockcastle River
Slabside pearlymussel (<i>Pleuroaia dolabelloides</i>)	Big South Fork of the Cumberland River
Tan riffleshell (<i>Epioblasma florentina walkeri</i>) ³	Big South Fork of the Cumberland River, Rockcastle River

¹ This species has been renamed *Venustaconcha troostensis*.

² This species has been renamed *Ptycobranchnus subtentus*.

³ This species has been renamed *Epioblasma walkeri*.

In-channel activities in the rivers listed above may potentially directly or indirectly affect one or more species of mussels. Even projects that do not involve in-channel activities still have the potential to impact listed mussel species and their habitats. Development activities that disturb uplands in watersheds containing listed mussel species can degrade streams and rivers by increasing siltation/sedimentation, introducing pollutants, and/or altering riparian areas. If the proposed project would directly or indirectly impact streams in the range of the Cumberland elktoe, the U.S. Fish and Wildlife Service’s Kentucky Field Office (KFO) can assist in

determining the likelihood of species' occurrence in the project area and recommend habitat assessments and/or species surveys.

When practicable, we recommend siting projects to avoid impacting streams and rivers that contain listed mussel species and utilizing methods, such as horizontal directional drilling and clear span bridges, to avoid direct impacts to listed mussel species and their habitats. The following are some general recommendations to minimize indirect impacts to streams and rivers and reduce effects to federally-listed mussels:

- Utilize Best Management Practices to minimize erosion from work areas;
- Limit vegetation removal to minimize impacts to riparian areas;
- Revegetate disturbed areas with native vegetation;
- Use bioengineering techniques to restore disturbance to stream banks;
- Install upland sediment basins, where appropriate, to minimize sediment input into streams and rivers;
- Install detention structures to manage stormwater runoff into streams and river; and
- Minimize the addition of impervious surfaces in the watershed.

When submitting project information to the KFO for review, please include information about streams and rivers in the action area of the proposed project. Describe any proposed activities that would occur in the channel or on the banks and include descriptions of measures proposed to reduce impacts to stream and river habitat.